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ADDITIONS TO THE APHID FAUNA OF FLORIDA*

A. N. TISSOT

In this paper are described two species of aphids apparently new to science. It also includes descriptions of the sexual forms and of the apterous viviparous female of another species of which only the alate viviparous female has heretofore been known.

Carolinaia rhois Tissot

Florida Ent. Vol. XII, No. 1, pp. 1-2, 1928 (orig. desc. ala. vivip. female).

This poison ivy aphid was first described from specimens taken in Hocking County, Ohio. The only form taken at that time was the alate viviparous female. In the spring of 1929 several colonies of this species, consisting of many alate females and a few apterous females were found at Gainesville, Florida. In November 1929 a few small colonies were found which contained alate viviparous females, apterous oviparous females, and winged males. The alate viviparous females from Florida differ slightly from the typical Ohio specimens. In the Ohio specimens the unguis of the sixth antennal segment is considerably longer than the third segment. In Florida specimens the unguis is usually but little longer than the third segment. Most of the individuals taken in Florida have one or two sensoria on the fourth segment of the antenna. This joint is without sensoria in the Ohio specimens. As the specimens from the two localities are, however, so similar in other respects and as they have the same food plant it seems very probable that they represent a single species.

As some of the forms of this species are still undescribed, a description of them will be given at this time.

Apterous viviparous female. (Plate IV, figs. 1 and 2.) General color of body and appendages yellowish-brown. Body form broadly oval, but little longer than wide. Length of body 1.80 mm. Head reddish-yellow; small in comparison to the size of the body. Width through the eyes, .340

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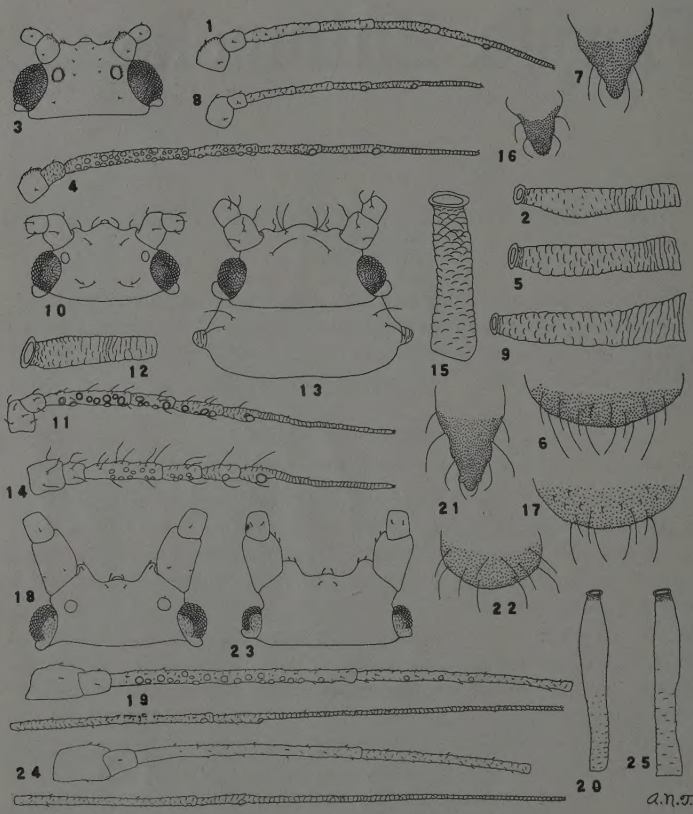

NEW FLORIDA APHIDS—PLATE IV

Carolinaia rhois Tissot

Figs. 1-2—Apterous viviparous female: 1, antenna; 2, cornicle.

Figs. 3-7—Male: 3, head; 4, antenna; 5, cornicle; 6, anal plate; 7, cauda.

Figs. 8-9—Oviparous female: 8, antenna; 9, cornicle.

Rhopalosiphum gnaphalii n. sp.

Figs. 10-12—Alate viviparous female: 10, head, 11, antenna; 12, cornicle.

Figs. 13-17—Apterous viviparous female: 13, head and prothorax; 14, antenna; 15, cornicle; 16, cauda; 17, anal plate.

Amphorophora crataegi n. sp.

Figs. 18-22—Alate viviparous female: 18, head; 19, antenna; 20, cornicle; 21, cauda; 22, anal plate.

Figs. 23-25—Apterous viviparous female: 23, head; 24, antenna; 25, cornicle.

mm. Eyes very dark reddish-brown, small, closely appressed to the head, without definite ocular tubercles. Antennae pale or dusky, about one-half as long as the body, six-segmented though the joint between the third and fourth segments may be faintly indicated or scarcely perceptible. The first two segments smooth, the remaining segments faintly imbricated. Length of the antennal segments as follows: I, .082 mm., II, .061 mm., III, .190 mm., IV, .136 mm., V, .150 mm., VI, base, .122 mm., unguis, .190 mm. Segments III and IV without sensoria, the usual sensoria at the apex of V, and at the base of the unguis. Rostrum light brown with dark brown tip; thick and rather short, reaching but little beyond the first coxae.

Thorax and abdomen yellowish, without markings. Legs yellowish or dusky with the tarsi light brown. Cornicles light brown. Considerably swollen above the middle, then suddenly narrowed to the apex which is flared. Very faintly imbricated. Length .422 mm. Cauda and anal plate dusky or light brown. Cauda triangular, somewhat constricted just before the apex. Surface covered with short thick spines. One or two short, fine hyaline hairs on each side arising at the point of constriction. Anal plate broadly triangular in outline, the surface covered with spines similar to those of the cauda, armed with several rather short hyaline hairs.

Male. (Plate IV. figs. 3-7.) General color of body and appendages brown. Length of body, 1.24 mm. Head dark olive-brown. Width somewhat greater than the length. Posterior margin somewhat rounded, front between the antennae produced. Width across the compound eyes, .394 mm. Eyes dark reddish-brown, large, prominent, with rather small ocular tubercles. Ocelli bordered with black. Antennae dark brown, but slightly lighter than the head. Six-segmented, as long as or longer than the body. The first two segments smooth, the remaining ones definitely imbricated. Third segment with 2-5 large circular or oval sensoria located on the basal third, and 15-22 small circular sensoria scattered over the segment. Fourth segment with 8-10 rather small circular sensoria. Fifth segment with 2-5 small secondary sensoria in addition to the apical primary one. Sixth segment with 1-3 sensoria on the basal portion and the usual group at the base of the unguis. Length of the antennal segments as follows: I, .054 mm., II, .047 mm., III, .218 mm., IV, .136 mm., V, .136 mm., VI, base, .095 mm., unguis, .258 mm., Rostrum brown, with tip black, thick and short, not reaching to second coxae.

Thorax reddish-brown, the lobes concolorous with the head. Prothorax but little wider than the head, with very small lateral tubercles. Wings hyaline, stigma grayish-brown, veins brown. Forewing with media twice-branched, the distance from the second fork to the margin of the wing about equal to the distance between the first and second fork. Radial sector long and sharply curved. Hind wing with a single oblique vein. Legs brown. The greater portion of the femora, the extremities of the tibiae, and the tarsi dark brown; bases of the femora yellowish-brown, the middle portion of the tibiae light brown.

The anterior half of the abdomen reddish-brown, the posterior portion yellowish-brown. The abdomen rather small in proportion to the rest of the body. Cornicles with the basal one-half or one-third yellowish brown, the apical portion dark brown. Widest above the middle, gradually

narrowed toward the base, abruptly narrowed toward the apex which is slightly flared, finely imbricated throughout their length. Length .245 mm. Cauda and anal plate yellowish or dusky. Cauda triangular in outline with a narrowed apical portion. Surface thickly covered with short, blunt, spine-like processes. Two or three slightly curved hyaline hairs on each side near the apex. Anal plate short, broad and rounded, the surface covered with spine-like structures similar to those of the cauda. Several rather long curved hairs arising from small conical bases.

Oviparous female. (Plate IV, figs. 8 and 9.) Prevailing color of body and appendages brown. Body broadly oval, length 1.60 mm. Head yellowish-brown, the margin darker than the middle portion. Eyes dark reddish brown, small, with inconspicuous ocular tubercles. Antennae about one-half as long as the body, six-segmented. The first segment very light brown, the remaining segments yellowish. The first segment about twice as wide as the second. The first two segments smooth, the remaining segments faintly imbricated. Antennae without sensoria except the usual primary ones at the apex of the fifth segment and at the base of the unguis. Rostrum yellowish with a dark brown apex. Well developed, rather thick, reaching to the second coxae. Length of antennal segments as follows: I, .054 mm., II, .048 mm., III, .150 mm., IV, .095 mm., V, .095 mm., VI, base, .095 mm., unguis, .177 mm.

Thorax about the same color as the head. Legs yellowish-brown, the tarsi grayish or dark brown. Hind tibiae swollen, the surface rather thickly studded with circular, raised sensoria. Numerous spine-like hyaline hairs arising from small conical bases situated between the sensoria.

Abdomen darker brown than the head or thorax. Yellowish areas where the eggs within the abdomen are visible through the body wall. Cornicles yellowish-brown, darker toward the apex. Somewhat swollen above the middle, tapering rapidly toward the apex which is slightly flared. Rather faintly imbricated throughout their length. Length .943 mm. Cauda and anal plate yellowish or dusky. Cauda triangular in outline, the surface covered with short spine-like processes, two slightly curved hyaline hairs on each side near the apex, and four or five similar hairs on the dorsal surface. Anal plate sharply rounded, the surface covered with spine-like processes similar to those of the cauda, numerous straight or slightly curved hyaline hairs arising from small conical bases.

TYPES: Allotype male, taken from *Toxicodendron (Rhus) radicans,* Gainesville, Nov. 22, 1929 (F 553-29), on slide with alate viviparous female and an immature specimen. Morphotype apterous viviparous female from *T. radicans,* Gainesville, Mar. 12, 1929, (F 497-29), on slide with two alate viviparous females and an immature specimen. Morphotype apterous oviparous female same data as Allotype male on slide with an alate viviparous female and two oviparous females, one of which is immature. All of the above types deposited in the U. S. National Museum Collection, Cat. No. 44296. Type material collected by the author.

RECORDS: Poison ivy, *Toxicodendron (Rhus) radicans,* Gainesville, Mar. 8, 1929 (F 489-29) (apterous viviparous females), Mar. 12, 1929 (F 497-29), Mar. 16, 1929 (F 503-29), (the last two collections consisted of numerous alate and a few apterous viviparous females), Nov. 22, 1929 (F 553-29) (alate viviparous females, apterous oviparous females, and males).

Rhopalosiphum gnaphalii new species

Alate viviparous female: (Plate IV, figs. 10-12.) Length 1.32 mm. Head dark brown or black. Frontal margin rounded, somewhat produced at the sides forming short antennal tubercles. Posterior margin nearly straight. Eyes very dark brown, large, prominent, with large ocular tubercles. Ocelli rather large, the median one protruding. Antennae six-segmented, somewhat shorter than the body. The first two segments smooth, the third and fourth faintly imbricated, the last two definitely imbricated. All the segments armed with a few slightly curved hyaline hairs, each arising from a globular tubercle. The third segment with twelve rather large sensoria, irregularly scattered over the surface of the segment. The fourth segment with five large sensoria. The fifth segment with three sensoria in addition to the usual primary one. The sixth segment with one large and two or three small sensoria at the base of the unguis. Length of the antennal segments as follows: I, .082 mm., II, .054 mm., III, .231 mm., IV, .122 mm., V, .122 mm., VI, base, .082 mm., unguis, .381 mm. Rostrum brown with apex black, rather thick and reaching to the middle coxae.

Prothorax but little wider than the head with small rounded lateral tubercles. Thoracic lobes dark brown or black. Wings hyaline with the stigma and veins very light brown. Fore wing with the media twice-branched, the second fork very close to the margin of the wing. Hind wing rather large in proportion to the fore wing, with two oblique veins. Legs brown, the bases of the femora and the greater portion of the tibiae yellowish-brown, the larger portion of the femora, the apices of the tibiae, and all of the tarsi dark brown.

Abdomen green, the margins dusky. Cornicles brown. Narrowest at the base, somewhat swollen above the middle, then abruptly constricted before the apex which is broadly flared. Very definitely imbricated throughout their length. Length, .190 mm. Cauda and anal plate brown. Cauda broadest at the base, somewhat constricted above the middle, with two curved hairs arising from each side. Anal plate broadly rounded, with several rather long somewhat curved hyaline hairs, and a few shorter and thicker curved hairs. The surface of the cauda and anal plate thickly studded with short spine-like processes.

Apterous viviparous female. (Plate IV, figs. 13-17.) General form of the body rectangular when viewed from above. Length, 2.04 mm. Head rather small in proportion to the size of the body. Front rounded and armed with four rather long, curved, hyaline hairs. Sides produced into short though definite antennal tubercles. Width of head through the compound eyes, .435 mm. Eyes very dark reddish-brown, large, with large ocular tubercles. Antennae six-segmented about one-half as long as the

body, brown. The first two segments smooth, the remaining ones imbricated. Third segment with 8-12 small, circular, scattered sensoria, the fourth with 4-6, the fifth with 0-1 in addition to the large primary one, the sixth segment with the usual group of one large and two or three small sensoria at the base of the unguis. All the segments armed with a few prominent, long, curved, hyaline hairs. Length of the segments as follows: I, .082 mm., II, .054 mm., III, .204 mm., IV, .095 mm., V, .095 mm., VI, base, .068 mm., unguis, .326 mm. Rostrum dark brown, thick, reaching nearly to the hind coxae.

Prothorax slightly wider than the head with large, wrinkled lateral tubercles. The other thoracic segments and the abdomen considerably wider than the prothorax. The abdomen armed with a few rather prominent curved hairs. The entire surface of the thorax and abdomen covered with irregular rows of fine spine-like processes. Legs brown, armed with numerous prominent spine-like hairs. Cornicles dark brown. Widest at the base, sharply constricted before the apex which is broadly flared. The entire surface of the cornicles marked by curved imbrications. Length, .231 mm. Cauda and anal plate brown. Cauda widest at the base, slightly constricted above the middle with two curved hairs on each side. Anal plate rounded with several curved hairs. The entire surface of the cauda and anal plate thickly set with short, thick spine-like processes.

TYPE LOCALITY: Plant City, Florida.

TYPES: Holotype alate viviparous female taken on *Cyperus esculentus* Jan. 22, 1930 (Q 288-28) and morphotype apterous viviparous female taken from *Gnaphalium* sp., Jan. 24, 1930 (Q 288-29) deposited in the U. S. National Museum Collection, Cat. No. 44297. Type material collected by G. F. Stahl.

NOTES: There are only two collections of this aphid as indicated above. The first consists of a single alate female. On the same slide with the alate female are three apterous females of *Carolinaia cyperi,* a species commonly found on nut grass. The second collection consists of a single slide on which are mounted one mature apterous female, two immature apterous females and one pupa of the alate female. It seems quite probable that the alate female taken on the nut grass was there accidentally and that the host plant of the aphid is *Gnaphalium.* Only preserved material is available and it is impossible to determine definitely the original color of this species, but it is apparently green with dark head, thoracic lobes, cornicles, and appendages.

RECORDS: *Cyperus esculentus,* Nut grass, Plant City, Jan. 22, 1930 (Q 28828) (G. F. Stahl); *Gnaphalium* sp., Plant City, Jan. 24, 1930 (Q 28829) (G. F. Stahl).

Amphorophora crataegi new species

Alate viviparous female: (Plate IV, figs. 18-22.) Prevailing color of the body yellowish. Length 1.60 mm. Head greenish-yellow. Width

somewhat greater than the length, posterior margin slightly rounded, antennal tubercles definite though rather short. Width across the compound eyes .462 mm. Eyes reddish-brown, prominent, with small ocular tubercles. Ocelli bordered with dark brown. Antennae six-segmented, longer than the body. First two segments dusky, the remaining segments an intense black. The first segment about twice as long and much wider than the second, somewhat gibbous on the inside margin. The first two segments smooth, the remaining ones imbricated. Third segment of the right antenna with 23 more or less circular sensoria, the fourth segment without sensoria. The corresponding segments of the left antenna with 21 and 1 sensoria respectively. The fifth segment of each antenna with one apical sensorium, the sixth with one large and two or three smaller sensoria at the base of the unguis. Length of the antennal segments as follows: I, .136 mm., II, .068 mm., III, .653 mm., IV, .544 mm., V, .530 mm., VI, base, .136 mm., unguis, .925 mm. Rostrum light yellowish-brown with the extreme tip black, rather thick, scarcely reaching to second coxae.

Prothorax concolorous with the head, meso- and metathorax more yellow, the lobes pale dusky. Prothorax somewhat wider than the head, narrowest in front and widening rapidly posteriorly, without noticeable lateral tubercles. The anterior edge of the mesothorax with a small cone-shaped tubercle on each side. Wings hyaline, stigma and veins brown. Fore wing with the radial sector present, rather long. Media twice-branched, the distance from the second fork to the margin of the wing less than the distance between the first and second forks. Hind wing with two oblique veins. All pairs of legs with femora greenish-yellow at the base, the apical portion light brown, the tibiae and the tarsi black. The legs with short hyaline hairs.

Abdomen greenish-yellow with bright green markings on the dorsum. On each side of the middle line near the thorax is an area of this bright green while a similar area lies just anterior to each cornicle. The two patches of each side connected by an irregular line of the same color. Cornicles dusky but filled with dark green globules which cause them to appear a dull green. Greatest width about one-third the distance from the apex to the base, tapering to the apex which is flared, a more gradual taper toward the middle with a slight expansion at the base. Surface of the cornicles smooth without reticulations or imbrications, length .435 mm. Cauda and anal plate concolorous with the abdomen or faintly dusky. Cauda about one-third as long as the cornicles, cone-shaped without an evident constriction. The surface thickly covered with short spine-like processes, three slightly curved hyaline hairs on each side between the middle and the apex, each of these hairs arising from a conical base. The anal plate somewhat elongated with rather straight lateral margins, the posterior margin curved. The surface covered with spine-like processes similar to those of the cauda, and armed with several curved hairs, each arising from a raised conical base.

Apterous viviparous female. (Plate IV, figs. 23-25.) Prevailing color of body and appendages yellow. Body oval, narrowed anteriorly and widest about the middle of the abdomen. Head greenish-yellow, width greater than the length, rather large antennal tubercles. Eyes reddish-brown with prominent ocular tubercles. Antennae six-segmented, con-

siderably longer than the body. First two segments concolorous with the head, third and fourth segments yellow with very small apical portions brown, fifth segment yellow with apical one-third brown, sixth segment entirely brown. First two segments smooth, the remaining segments imbricated. The third and fourth segments without sensoria, the fifth with the usual apical one, and the sixth with one large and five small sensoria at the base of the unguis. Rostrum light brown with apex black, reaching to second coxae. Prothorax with small lateral tubercles, the other thoracic segments and the abdomen without tubercles. Legs yellow with the tarsi and the apices of the tibiae brown. Cornicles yellow or slightly dusky, distinctly swollen, the widest portion about one-third the distance from the apex to the base, the apex flared. Surface smooth, without imbrications or reticulations. Cauda and anal plate concolorous with the abdomen, shaped as in the alate female. The surface of each covered with spine-like processes, the cauda with three curved hairs on each side, the anal plate with several such hairs, each arising from a raised conical base.

Measurements of the apterous female as follows: length, 1.80 mm., width of head across the eyes, .435 mm., length of antennal segments, I, .150 mm., II, .76 mm., III, .558 mm., IV, .476 mm., V, .462 mm., VI, base, .136 mm., unguis, .789 mm., cornicles, .476 mm.

TYPE LOCALITY: Gainesville, Florida.

TYPES: Holotype alate viviparous female from *Crataegus uniflora*, Gainesville, Feb. 15, 1929 (F 470-29), deposited in the U. S. National Museum Collection, Cat. No. 44298. Morphotype apterous viviparous female same data as the holotype in the collection of the writer. Paratypes from the same lot as the holotype in the collections of the Entomology Department of the Florida Agricultural Experiment Station and in that of the writer.

NOTES: This yellowish aphid appears to be rather similar to *Macrosiphum crataegi* (Monell), but differs from it in certain respects. In *M. crataegi* the cornicles are only slightly swollen, the constriction near the apex accentuating the appearance of being swollen. In *Amphorophora crataegi* the cornicles are very definitely swollen. The antennal segments of *A. crataegi* are very finely and faintly imbricated whereas the imbrications in *M. crataegi* are coarser and more definite. Specimens of this species were examined by Dr. P. W. Mason who expressed the opinion that it was an undescribed species of *Amphorophora*.

The fore wing of this species shows considerable variation in the branching of the media. The typical condition seems to be a twice-branched media. Of ten individuals studied, four had one wing with the media twice-branched and the other wing with this vein once-branched, and the two remaining individuals had both wings with the media but once-branched.

The measurements of the different structures of ten individuals are as follows: length, 1.40-1.72 mm., width of head, .408-.462 mm., length of antennal segments, III, .598-.653 mm., IV, .544-.612 mm., V, 503-.585 mm., VI, base, .122-.136 mm., unguis, .843-.966 mm., length of cornicles, .408-.499 mm., third segment of the antenna with 14-23 sensoria, fourth segment with 0-3 sensoria.

RECORDS: *Crataegus uniflora,* Gainesville, Feb. 15, 1929 (F 470-29).

INSECT PARASITES OF CITRUS IN CENTRAL AMERICA

By MARSTON BATES
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(Continued from Vol. XVII, No. 2, p. 32)

LEPIDOPTERA

Papilio thoas Linn. (Papilionidae)

Both this species and *cresphontes* are common on the Caribbean coast, and larvae were frequently found on Citrus.

Papilio anchisiades Esp. (Papilionidae)

This species belongs to a large group of tropical American Papilios whose larvae, as far as known, are all Citrus feeders. The life-history of *anchisiades* has been described several times; the larvae look much like our orange dogs, but live in large colonies of forty or fifty caterpillars, capable of defoliating a small tree in a very short time. The insect is generally distributed in the region.

Eantis pallida Felder (Hesperidae)

Like other Hesperidae, the larva of this species is a leaf-roller. It was found in all parts of the region, but never commonly. Another species of the genus *(Eantis thraso)* has been recorded as feeding on Citrus in Porto Rico (Walcott, 1923).

Ecpantheria icasia Cramer (Arctiidae)

Larvae of this species were several times found on Citrus at Tela, Honduras. As other species of the genus are known to be general feeders, it is likely that *icasia* too has a wide range of hosts.

DIPTERA

Anastrepha ludens Loew (Trypetidae)

Fruit flies were my primary study during the three years that I spent in Honduras and Guatemala; but of the five species of *Anastrepha* bred from cultivated fruits, only *ludens* was found

in Citrus. It occurs on the Pacific slope of Guatemala from sea level to five thousand feet, but apparently does not extend above the line of occasional frosts. On the Atlantic side it was found down the Motagua river valley as far as Zacapa (600 ft.), but never on the Caribbean coast, although a special search was made for it there. It is difficult to understand this limit of distribution, unless it be due to some environmental factor, as there is no natural barrier between Zacapa and the coast. The Zacapa region is typically xerophytic, and the entire Pacific coast is characterized by a pronounced dry season, even though in some places where *ludens* occurs the annual rainfall may be much higher (200 inches) than on the Caribbean coast (150 inches) where it does not occur. A careful study of the southern limits of the insect would probably be instructive.

Ludens is typically a pest of the sour orange, occurring rather rarely in sweet oranges. It is found also in matasanos *(Casimiroa edulis,* Rutaceae, indigenous), and in mangos (Anacardiaceae, introduced). It was not found in other Anacardiaceous fruits, typically the hosts of a quite different *Anastrepha,* apparently as yet undescribed.

The Federal Horticultural Board has recently published a report of fruit fly surveys on the Caribbean coast of Central America, made by Dr. Mann and Mr. Kostal (Anon., 1926). It is notable that no larvae of *Anastrepha* were found in Citrus fruits, although adults of various species were collected, and larvae were found in other kinds of fruit. Larvae of *Euxesta sp.* (Ortalidae) were found in oranges, but as these have previously been found only in injured fruit, further investigation must be made before these flies can be listed as pests. We have 10 native species of *Euxesta* in Florida (Johnson, 1913, p. 82).

HYMENOPTERA

Solenopsis geminata Fab. (Formicidae)

These fierce little ants are widely distributed and always a nuisance, and there are a few references to them as enemies of Citrus in the literature. In widely varying environments in Central America (Tela, Honduras: low, very tropical; Antigua, Guatemala: high, somewhat arid, and temperate) they were the principal enemies of young Citrus trees. The nests were generally located at the base of the tree, and extensive sand-covered galleries were built up over the trunk, under which the tree would sometimes be completely girdled. Not satisfied with this, the ants would chew off the terminal shoots, severely check-

ing growth. Tower, 1911, has described this habit of *Solenopsis* in Porto Rico.

Atta spp. (Formicidae)

The leaf-cutting ants, wherever they occur, cause severe damage to Citrus, the trees of this genus being among the plants most subject to attack. Three species of economic importance were found in Central America: *Atta mexicana* Smith (Salvador), *Atta sexdens* Linn. (highlands of Guatemala, det. Mann), and *Atta cephalotes* Linn. (Honduras, Mann, 1922: "comparatively little damage to Citrus").

Trigona spp. (Meliponidae)

Small black stingless bees of the genus *Trigona* are perhaps the most striking pest of Citrus in the lowlands of Honduras. Two species are commonly involved: *Trigona amalthea* Oliv., and *Trigona silvestriana* Vachal (det. Schwarz). They are especially abundant on young trees, and seem to show a preference for grapefruit. They strip the bark from the main trunks of the trees and chew up the terminal leaflets, apparently in an effort to collect the sticky sap, probably for use in the construction of their nests.

I do not know of any record of these insects heretofore as pests of Citrus, although they have been frequently observed on bananas, where they cause scars along the ridges of the fruit, made in an effort to collect the latex. The list of plants subject to attack is, in fact, large, and their only common characteristic seems to be the possession of a sticky sap or latex. In Tela the bees were especially damaging to species of *Garcinia*, to breadfruit, and to bananas. They were frequently observed on forest trees that had been injured, so that the sap was flowing.

LITERATURE CITED

Anon., 1926. Fruit-Fly surveys in Honduras, British Honduras and Gautemala. U. S. D. A., Fed. Hort. Board, Service and Regulatory Announcements, No. 86, p. 10.

Baker, A. C. 1923. An undescribed orange pest from Honduras. Jour. Ag. Res., XXV, pp. 253-254, pl. 1, 2.

Johnson, C. W. 1913. Insects of Florida. I. Diptera. Bull. Am. Mus. Nat. Hist., XXXII, pp. 37-90.

Mann, W. M. 1922. Ants from Honduras and Guatemala. Proc. U. S. N. M., 61, pp. 1-54.

Tower, W. V. 1911. Insects Injurious to Citrus Fruits and Methods for Combating Them. Bull. 10, P. R. Ag. Exp. Sta., pp. 1-35.

Wolcott, G. N. 1923. Insectae Portoricensis. Jour. Dept. Agr., Porto Rico, VII, p. 1-312.

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TWO NEW SPECIES OF OEDALEOTHRIPS WITH NOTES ON OTHER SPECIES*

J. R. WATSON

Oedaleothrips walteri, n. sp.

Female (Apterous). Body length about 2.17 mm. General color dark brown, head and abdomen nearly black, thorax, tarsi and antennal segments 1 and 2 lighter, yellowish brown, antennal segment 3 yellow shaded with brown on apical and basal thirds. An ivory white band extends entirely across the dorsal surface of abdominal segment 1, and a similar tho smaller band extends a third of the distance across the ventral surface. A similar large blotch on each side of segment 5 is nearly as wide as the segment. Very small spots on segments 3 and 4.

HEAD nearly twice as long as wide, widest across the eyes, quite markedly constricted near the base which is about three-fourths as wide as the width across the eyes. Dorsal surface near base with a distinct though fine network. Postocular bristles short but thick, capitate, brown, a pair of similar but lighter bristles at the bases of the antennae and another pair on the inner margin of the first antennal segments. These bristles are much heavier than similarly situated bristles on *O. jacksoni* and *O. hubbelli.*

EYES large, flat, protruding, not produced posteriorly on ventral side. Ocelli lacking, mouth cone very broad, reaching a little over halfway across the prothorax.

ANTENNAE about 1.2 as long as head. Segment 1 about as wide as long, dark brown, lighter at base; 2 dark brown, lighter at apex; 3 clavate, widest at apex, sides conspicuously concave; 4 widest at apex, from whence it tapers evenly to a broad base, prolonged on inner side at apex, very dark brown; 5 inserted on 4 at an angle, similar to 4 in shape but apical prolongation less pronounced.

PROTHORAX only half as long as head, and (including coxae) two-thirds wider than long. Pterothorax narrowed, but wider than the head (narrow-

*Contribution from the Department of Entomology, Florida Agricultural Experiment Station.

er in *O. jacksoni*), anterior angles of the mesothorax extended into a thin plate-like membrane, metanotum with conspicuous, concentric amastomising striae. Legs slender; fore tarsus with a stout tooth with a recurved tip.

ABDOMEN heavy, about twice as wide as pterothorax. Tube black, less than half as long as head and more than twice as wide at base as at apex; bristles about three-fourths as long as the tube, colorless and pointed. Those on segment 9 of about the same length but capitate.

MEASUREMENTS of holotype: Length 2.2 mm.; head, length .50 mm., width across the eyes .285 mm., width at base .21 mm.; prothorax, length .22 mm., width (including coxae) .40 mm.; pterothorax, width .32 mm.; abdomen, width .60 mm., tube, length .20 mm., width at base .14 mm., at apex .065 mm.

Antennal segments length (width) I, 54 (54); II, 80 (41); III, 160 (43); IV, 103 (45); V, 101 (41); VI, 80 (38); VII, 52 (33); VIII, 46 (20) microns. Total length .63 mm.

Described from a single female taken from egg masses of some insect on *Acacia farnesiana* from Buenos Aires, Argentina, by W. B. Wood of B. P. Q., U. S. D. A. Named for Mr. J. E. Walter, who first mounted and examined this insect and placed it in its proper genus.

The long head, widest across the eyes, the color of the first two antennal segments which are much darker than the third, the heavy spines at the base of the antennae and on the first segment will distinguish this species from others of the genus.

Oedaleothrips andrei n. sp.

Female (apterous). Length about 2 mm. (1.7 mm. to 2.5 mm.). Head and abdomen blackish brown; pterothorax lighter; prothorax, legs, and antennal segment 1 brownish yellow; segments 2-5 and sometimes base of 6 brighter yellow, 5 shaded with brown in apical half. No ivory colored blotches on abdomen.

HEAD but little longer than wide, widest across the eyes, about .8 as wide at the base. Cheeks arched; dorsal surface reticulated posteriorly. Postoculars about as long as the eyes, pale, with pointed tips. The setae at base of antennae very thin and inconspicuous. Eyes small, not protruding, extended posteriorally on ventral surface. Ocelli very small, smaller than the facets of the eyes. Antennae less than twice as long as the head. Sense cones and spines colorless but long and slender.

PROTHORAX .7 as long as head, and (including coxae) a third wider. Spines on coxae colorless and sharp pointed.

PTEROTHORAX nearly as wide as prothorax and distinctly wider than the head. Metanotum smooth. Legs slender, fore tarsus unarmed. Abdomen large and heavy; terminal bristles of tube and those on segment 9 about as long as tube.

MEASUREMENTS (Average).

Head, length .30 mm., width .26 mm.; prothorax, length .21 mm., width .41 mm.; pterothorax, width .37 mm.; abdomen width, .62 mm.; tube, length .20 mm., width at base .10 mm., at apex .047 mm. Antennal segments, length (breadth) I, 41 (52); II, 70 (39); III, 97 (37); IV, 89 (38);

V, 82 (40); VI, 70 (35); VII, 59 (26); VIII, 51 (15) microns. Total length .55 mm.

Male only a trifle smaller than the female (1.6 mm. to 2.17 mm.). Fore femora greatly enlarged, reaching to the middle of the eyes and two-thirds as thick as the head. Fore tibiae conspicuously bent, a small rounded tooth at the apex on the inside. Tarsal tooth large, recurved.

Measurements (average of three). Head, length, .29 mm., width .24 mm.; prothorax, length .23 mm.; width (including coxae) .43 mm.; pterothorax, width .38 mm.; abdomen, width .55 mm.; tube, length .19 mm.; width at base .107 mm., at apex .047 mm.

Antennae, length (breadth); I, 46 (49); II, 65 (37); III, 92 (36); IV, 87 (35); V, 80 (36); VI, 70 (33); VII, 57 (24); VIII, 46 (13) microns. Total length .53 mm.

Described from four females and four males taken from a haystack at Boone, Iowa, Mar. 1, 1933 and at Ames, Iowa, Jan. 25, 1933 by Mr. Floyd Andre.

This species lacks many of the characteristics of the species of the genus hitherto described, including the ivory white blotches on the abdomen. The pterothorax is not as narrow as in other species, giving the insect a less ant-like appearance, ventral prolongations on antennal segments 4-6 scarcely noticeable. However, the shape of the head, antennae, eyes, mouth cone and heavy abdomen indicate clearly that it belongs in this genus.

(To be continued)

FRED W. WALKER KILLED

F. W. Walker, a member of the Florida Ent. Soc. and Assistant Entomologist of the Florida Agric. Experiment Station in charge of the laboratory for the study of pecan insects at Monticello, Fla., was killed in an automobile accident during the night of October 8-9. He had worked chiefly on pecan and banana insects and on orthoptera.

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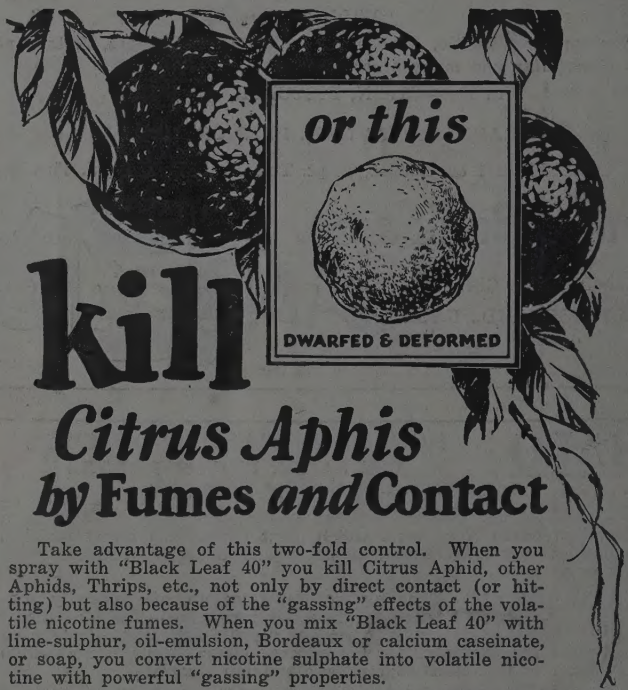

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